A WINTER EVENING PROBLEM.

By Stella M. Wylie.

It was about half-past nine one winter evening. The family were all gathered in the "Cosy," as the upstairs sitting-room was called, whiling away the few remaining minutes before bed-time. The school-boy had long ago laid aside his books, with a feeling of thankfulness that to-morrow's lessons were well prepared, and he and paterfamilias were just finishing up a domino tournament that had been running for a number of evenings. Grandma, at her corner of the table, was deeply absorbed in a book; mother and sister were embroidering; brother Max was looking over his day's accounts; and the school-teacher had just ceased work for that night, and helped herself to a reserved seat on the hall stairs to join in the talk and fun.

"Dominoed!" calls out the school-boy with glee, as he clicks down his last domino. "Beaten again! We 've had three tournaments, and I 've beaten father in every one."

"That means I sha'n't play with you again for one while," says paterfamilias, with the rueful expression appropriate to the occasion. Then, feeling that it is necessary to explain his misfortunes to the assembled multitude — "I could n't draw a thing that would fit in, and he dominoed me four times running before I could get rid of the double-six. Did you ever hear of such luck! No, don't ask me to play again. I 've had enough for one night."

Exultant over his success, and eager to score new triumphs, the school-boy now turns to the teacher.

"Here 's a question for you, Miss Russell. A boy walks around a pole, and there 's a monkey on top of the pole; the monkey turns so as to face the boy all the way around. Does the boy walk around the monkey or does n't he?"

Now the teacher has had some experience with the school-boy's puzzling questions before; and expecting some catch, tries to look at it from all points of view, much as a dog walks around and around some strange object, gingerly sniffing and putting out a paw now and then before he ventures upon finalities.

"Well, that depends," she begins cautiously. "How high is your pole?"

"I did n't say. That does n't have anything to do with it, anyway."

"I 've heard that before," remarks mother; "but I can't seem to remember just what the answer was."

"Well, I should think the height of the pole would make considerable difference. If the monkey is above the boy's head, I don't very well see how he could walk around him," answers the teacher. "Is the pole any taller than the boy?"

"Yes; the pole is taller than the boy" — and the school-boy nods reassuringly. But alas, and alas! — there is a twinkle in the school-boy's eye that indicates fun ahead.

"And the monkey stays on top of the pole?"

"The monkey stays on top of the pole."

"Of course he does n't walk around the monkey. How can he?" the teacher says with conviction.

"No; of course he does n't!" This from the mother.

"But he does," puts in paterfamilias. He has been through the mill, and is now enjoying the troubles of the novices.

"Walk around the monkey, when the monkey 's above his head? Why, that 's absurd," protests the teacher.

"He does — absurd or not."

"Well, I 'd like to know how. I don't see how he can walk around anything that 's higher than his head."

"Nor I."

Everybody is in a proper frame of mind now, and the school-boy begins to relish the fun.

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"Well," he begins, "the monkey 's on the pole, is n't he?"

"Yes."

"And the boy walks around the pole?"

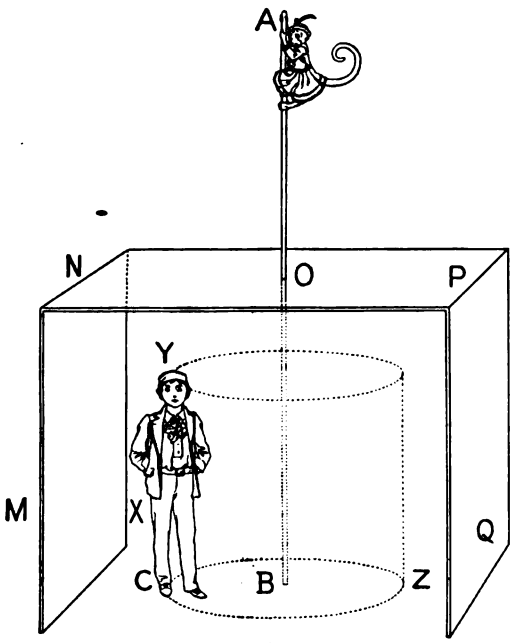
"Ye-es."

"Well, then, if the monkey 's on the pole, and the boy walks around the pole, he walks around whatever is on the pole, too. See?"

The teacher looks rather puzzled, but not wholly convinced yet.

"No, sir; he does n't walk around the whole pole; only that part of it that is as high as his head," she argued.

"Is that the answer? — that the boy does walk around the monkey?" asks mother.



THE TEACHER'S DIAGRAM.

"Yes, around anything that 's on the pole."

"I don't believe that," says the teacher, a little rebelliously. "You can't walk around what 's above your head."

"Did n't you ever walk around a house?" Brother Max has laid aside his accounts, and asks this question in the most innocent manner possible.

"Why, why,— but —"

"Or around a square with lots of houses, and maybe a church or two in it?"

Feeling very much as if what had looked so inoffensive had turned out to be an active little torpedo, the teacher wilts and beats a hasty retreat amid general laughter.

But it is n't a second before she is back again: "But, still, I don't believe yet that the boy walks around that monkey. Now just listen to me. Here 's a geometrical proof: If you move a point around so that its distance is always the same from a center, you make a circle, don't you?"

After a little study and the drawing of a figure on paper, the family assents.

"Well, now, which occupies the most space, a point or a line?"

They are cautious now about answering, but it is finally decided that the line may take up more space in a given direction.

"Now, suppose we take this lead pencil for the line, set it up on end, and move it around as we did the point. The point described a circle; the line describes a cylinder — like a stovepipe."

This takes more studying, but assent is at length given.

"The boy is a sort of a straight line; and the cylinder he describes in his walk around the pole incloses only the part of the pole as high as he is. The boy does n't walk around all the pole or around the monkey, which is on that part of the pole above his head. Q. E. D."

But victory does n't perch on the teacher's banner yet.

"You walk around the house, and you walk around the monkey," persists the school-boy.

"But you don't really walk around the whole house. That 's only a figure of speech in which you transfer the meaning of a part to the whole. Besides, just how far does the inclosed space, that the boy is supposed to walk around, extend in an upward direction? If it extends above his head at all, there is no reason why it should ever stop. If the boy walks around the whole house, then he walks around the star just above that house. To 'walk around a house' is only a figure of speech in which you transfer the meaning to the whole, simply because there is no need of a more detailed explanation."

The school-boy has n't studied geometry, and wonders what all this puzzling talk is about.

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Brother Max is about half won over, and the rest of the family keep silence; but it is n't an assenting kind of silence. They are only gathering their forces. The teacher feels that the air will be full of arguments in a few moments, and chooses to make off, before her doubtful victory can be called into question.

"If the monkey is on the pole, he 's on the pole; that 's all there is about it," remarks paterfamilias, and forthwith dismisses the question from his mind, and turns to the evening paper. The school-boy begins to pick up the dominoes, chuckling over his evening's success: he has come out winner in the third tournament, and set the whole family to arguing over the monkey on the pole. His sister wonders what people want to go to arguing for, anyhow, and keeps on with her embroidery.

The teacher, however, is getting warmed up over the question, and can't go to sleep. She suddenly returns again with an apologetic "Positively my last appearance, this time. I 've got something more to say about that monkey, and here 's a diagram to illustrate it. I wanted you to see it before you all went to bed."

Every one is considerably amused by this time, and the diagram, after arousing some curiosity, furnishes still greater amusement.

"Here is the pole," explains the teacher, indicating the line AB, "and the monkey on top of it. X is the boy, and YZ the cylinder he describes in walking around the pole. I forgot to make the monkey face the boy, but you can imagine that he does. The boy walks around the monkey, you say? Very well. Now we won't move the monkey at all; but suppose we build this shed, M N P Q, so that the pole may rest on it at O, and cut away O B. The boy, you said, walked around the monkey; now the monkey has n't moved an inch, and the boy takes the same path as before — C Z C. Does he still walk around the monkey?"

The silence is intense as each one traces the diagram and thinks out the problem for himself.

"In other words, if a boy walks around his dining-room table, does he walk around the cupola which is directly above it, and which might be connected with it by a pole?"

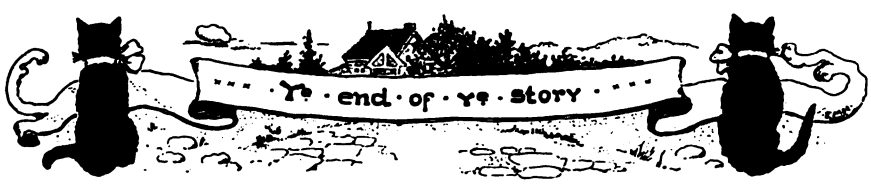
"That depends," Brother Max began, thoughtfully. "Don't you remember that the monkey 'turns so as to face the boy all the way around'? If the monkey does that, the boy never is on more than one side of the monkey — being always in front. What do you say on that point?"

The family seem dismayed. Here is a new world to conquer. But before any of the speakers begins the debate, another voice is heard. All this time grandmother has been quietly reading her book. Now she closes it with an authoritative:

"If the monkey is on the pole, and the boy walks around the pole, he walks around the monkey on the pole."

This is final so far as that family is concerned; and with a laugh of relief the family break up to dream of poles and monkeys and boys, and boys and monkeys and poles.

What do you say about it?



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